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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/530,349	04/06/2005	Takahiro Kishioka	123418	7775

25944 7590 03/07/2007

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EXAMINER	
ASHTON, ROSEMARY E	
ART UNIT	**PAPER NUMBER**
1752	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/07/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/530,349	KISHIOKA ET AL.	
	Examiner	Art Unit	
	Rosemary E. Ashton	1752	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 December 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☐ Claim(s) *1-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,10-19* is/are rejected.

7)☒ Claim(s) *3-9* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *4/6/05,5/9/05,3/21/06*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

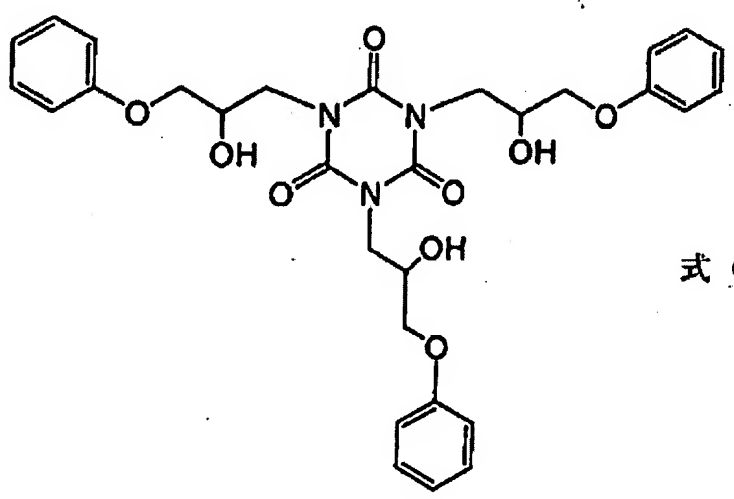
Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1,2 are rejected under 35 U.S.C. 102(a) as being anticipated by WO 02/086624 A1 cited on applicant's IDS.

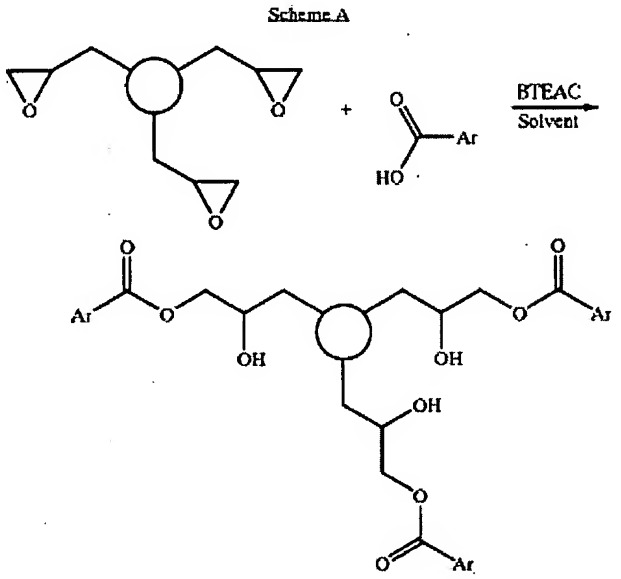
WO 02/086624 A1 discloses a composition for forming an antireflection film used for lithography. The composition comprises a triazine trione having hydroxyalkyl groups as shown in formula 8 on page 15 (shown below). Formula 8 meets the limitations of formula 1 in claim 2, X=O, M=ph, A1-A3 =H.



式 (8)

3. Claims 1,2,10-19 rejected under 35 U.S.C. 102(e) as being anticipated by Neef et al. publication no. US 2004/0110089 A1.

Neef teaches an antireflective composition comprising a triazine trione as shown above. It reacts to have the groups as in formula 1, CH2-CHOH-CH2, as shown below. The circle is the triazine trione. The Ar groups are listed as X in claim 11. The composition also comprises a crosslinker such as Powderlink 1174 or a multifunctional epoxy resin and an acid as in claims 12 and 14 below.



11. The composition of claim 8, wherein X is selected from the group consisting of benzene, anthracene, naphthalene, and alkyls.

12. The composition of claim 1, wherein said composition further comprises an ingredient selected from the group consisting of surfactants, crosslinking agents, catalysts, and mixtures thereof.

13. The composition of claim 12, wherein said ingredient is a crosslinking agent selected from the group consisting of aminoplasts, epoxy resins, anhydrides, and mixtures thereof.

14. The composition of claim 12, wherein said ingredient is a catalyst selected from the group consisting of sulfonic acids, thermal acid generators, carboxylic acids, and mixtures thereof.

The k value is shown in section 24 with exposure wavelengths claim in claim 19. The method of patterning is taught in section 23 below.

> **[0024]** Anti-reflective coatings according to the invention have high etch rates. Thus, the cured anti-reflective coatings have an etch rate of at least about 10 Å/second, and preferably from about 11-15 Å/second when CF_4 gas is used as the etchant. Additionally, at about 193 nm a cured layer formed from the inventive composition and having a thickness of about 320 Å will have a k value (i.e., the imaginary component of the complex index of refraction) of at least about 0.40, and preferably at least about 0.50, and an n value (i.e., the real component of the complex index of refraction) of at least about 1.5, and preferably at least about 1.7. That is, the cured coatings will absorb at least about 95% of light at wavelengths of about 157, 193, 248, and 365 nm and at a layer thickness of about 320 Å. The coatings can be used to obtain a resolution of less than about 150 μm and preferably less than about 100 μm in 193 nm photoresists.

> **[0023]** The method of applying the inventive anti-reflective compositions to a substrate (e.g., Si, Al, W, WSi, GaAs, SiGe, Ge, Ta, and TaN wafers) simply comprises applying a quantity of a composition hereof to the substrate surface (either a planar surface or one comprising vias or holes formed therein) by any conventional application method, including spin-coating. The layer should then be heated to at least about the crosslinking temperature of the composition (e.g., about 150-205° C.) so as to cure or harden the layer having a thickness of anywhere from about 100-5,000 Å where the thickness is defined as the average of 5 measurements taken by an ellipsometer. A photoresist can then be applied to the cured material, followed by exposing, developing, and etching of the photoresist.

Allowable Subject Matter

4. Claims 3-9 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: The prior art does not teach the triazine triones in these claims.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rosemary E. Ashton whose telephone number is 571-272-1326. The examiner can normally be reached on Mon-Fri, 11:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cynthia Kelly can be reached on 571-272-1526. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Rosemary E. Ashton
Primary Examiner
Art Unit 1752

March 2, 2007

ROSEMARY ASHTON
PRIMARY EXAMINER